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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/451,665	11/30/1999	SHUNPEI YAMAZAKI	07977/017002	9359

26171 7590 01/03/2007  
FISH & RICHARDSON P.C.  
P.O. BOX 1022  
MINNEAPOLIS, MN 55440-1022

EXAMINER
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SCHILLINGER, LAURA M

ART UNIT	PAPER NUMBER
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2813

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/03/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

09/451,665

Applicant(s)

YAMAZAKI ET AL.

Examiner

Laura M. Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7-13,15,16,18-23,25,26,28-34,36,37 and 39-83 is/are pending in the application.
- 4a) Of the above claim(s) 12,13,15,16,18-23,25,26,28-34,36,37 and 39-83 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 7-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-2, 4-5, and 7-11 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Farrenkopf et al et al et al ('315).

In reference to claim 1, Farrenkopf et al et al teaches a method comprising:

forming a crystalline semiconductor film on an insulating surface (Fig.9l.2 (22))

forming an insulating film on the semiconductor film (Fig.9m.1(168); Fig.11d.1 (44/50);

introducing a dopant through the insulating film by an ion doping (Fig.9n.1(P) see also, Col.23-26-teaching the same for 50);

annealing the crystalline semiconductor film to repair lattice defects (Col.22,lines: 25-35; Col.26, lines:1-10);

forming a gate electrode over the insulating film (Fig.11d.1 (48A and B)); and

forming a channel region in the doped region of the crystalline semiconductor film (Col.23-24, lines:65-5);

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wherein a peak of a concentration of the dopant profile is located in the insulating film (inherent for layers 44 and 22 where the oxide is used as a mask and no impurities pass into the underlying semiconductor layers).

In reference to claim 2, Farrenkopf et al et al teaches wherein the insulating film is SiO (Col.22, lines:25, Col.23, lines:50-55 ).

In reference to claim 4, Farrenkopf et al et al teaches wherein the first dopant is B (Col.22, lines: 15-25).

In reference to claim 5 Farrenkopf et al et al teaches wherein the semiconductor film is polycrystalline Si (Col.8, lines:20-35).

In reference to claim 8, Farrenkopf et al et al teaches wherein the insulating film is removed (Col.22,line:25).

In reference to claims 9 and 10, Farrenkopf et al fails to explicitly teach wherein the semiconductor device as the result of claim 1 is used in as a AMD nor a shift register having TFTs (however, the device as formed is automatically rejected with claim 1 and it is inherent that the device structure could be used in a AMD setting or as a shift register).

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farrenkopf et al as applied to claim 1 above, and further in view of Takemura et al ('762).

In reference to claims 7 and 11, Farrenkopf teaches the limitations of claim 1 however fails to specify wherein B is supplied by diborane gas teaches and a step of irradiating a laser light to the crystalline semiconductor film. However Takemura teaches a similar method including wherein B is supplied by diborane gas (Col.7, lines: 20-25) teaches and a step of irradiating a laser light to the crystalline semiconductor film (Col.5, lines: 45-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Farrenkopf to further include the teachings of Takemura because the use of laser annealing and diborane are well known techniques to perform lattice repair and supply boron dopants.

### ***Response to Arguments***

Applicant's arguments filed 10/3/06 have been fully considered but they are not persuasive. Applicant argues that layer 22 is not formed on an insulating surface and that the substrate surface is conductive; this is incorrect- see Col.20, lines: 50-60- teaching that oxide 20 is formed on the substrate. Applicant argues that the impurities are not introduced into the

crystalline semiconductor insulating film- however this is not persuasive because the mask oxide has holes which expose the layer to impurities.

***Conclusion***

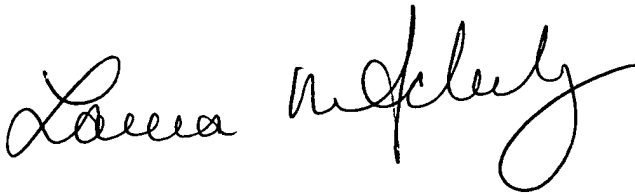
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Laura M Schillinger', written in a cursive style.

Laura M Schillinger  
Primary Examiner  
Art Unit 2813

12/14/06